

The opinion in support of the decision being entered today was not written for publication and is not binding precedent of the Board.

Paper No. 25

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KOJI YOKOYAMA, HIDEAKI SATOU, and MINORU SAKAGUCHI

Appeal No. 1998-2484
Application No. 08/212,819

ON BRIEF

Before THOMAS, FLEMING, and LEVY, Administrative Patent Judges.
LEVY, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 2-6 and 8-13, which are all of the claims pending in this application.

BACKGROUND

The appellant's invention relates to a sealed container for either a high voltage conductor or an electric power device. An understanding of the invention can be derived from a reading of exemplary claim 2, which is reproduced as follows:

2. A sealed container containing therein a high-voltage conductor or an electric power device, and having a flange connection part in which an insulating spacer is inserted between tow flanges, comprising:

inward and outward grooves provided in at least one of the insulating spacer and the flanges, said grooves being respectively provided in annular form inwardly and outwardly of flange-fastening-means inserting holes;

flange-fastening means inserted in the flange-fastening-means inserting holes;

a liquid packing injected into said flange-fastening-means inserting holes; and

sealing means disposed in said respective grooves.

The prior art references of record relied upon by the examiner in rejecting the appealed claims are:

Sweeny et al. (Sweeny) 1965	3,291,890	Jul. 30,
Bawa et al. (Bawa) 1985	4,549,037	Oct. 22,
Hama et al. (Hama) 1988	4,786,761	Nov. 22,

Yamaoka et al. (Yamaoka)
23, 1981
(Japanese Patent)

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Claims 2-4, 6, and 8-16 stand rejected under 35 U.S.C. § 103 as being unpatentable over JP'313 in view of Sweeny and Bawa.

Claim 5 stands rejected under 35 U.S.C. § 103 as being unpatentable over JP'313 in view of Sweeny, Bawa, and further in view of Hama.

Rather than reiterate the conflicting viewpoints advanced by the examiner and the appellant regarding the above-noted rejections, we make reference to the examiner's answer (Paper No. 22, mailed September 22, 1997) for the examiner's complete reasoning in support of the rejections, and to the appellant's brief (Paper No. 21, filed July 30, 1997) and reply brief (Paper No. 23, filed November 28, 1997) for the appellants' arguments thereagainst. Only those arguments actually made by the appellants have been considered in this decision. Arguments which the appellants could have made but chose not

to make in the briefs have not been considered. See 37 CFR 1.192(a).

OPINION

In reaching our decision in this appeal, we have carefully considered the subject matter on appeal, the rejections advanced by the examiner, and the evidence of obviousness relied upon by the examiner as support for the rejections. We have, likewise, reviewed and taken into consideration, in reaching our decision, the appellants' arguments set forth in the briefs along with the examiner's rationale in support of the rejections and arguments in rebuttal set forth in the examiner's answer.

It is our view, after consideration of the record before us, that the evidence relied upon and the level of skill in the particular art would not have suggested to one of ordinary skill in the art the invention as set forth in claims 2-6 and 8-13. Accordingly, we reverse.

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the examiner to establish a factual basis to support the legal conclusion of obviousness. See In re Fine, 837 F.2d 1071, 1073, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). In

so doing, the examiner is expected to make the factual determinations set forth in Graham v. John Deere Co., 383 U.S. 1, 17, 148 USPQ 459, 467 (1966), and to provide a reason why one having ordinary skill in the pertinent art would have been led to modify the prior art or to combine prior art references to arrive at the claimed invention. Such reason must stem from some teaching, suggestion or implication in the prior art as a whole or knowledge generally available to one having ordinary skill in the art. Uniroyal, Inc. v. Rudkin-Wiley Corp., 837 F.2d 1044, 1051, 5 USPQ2d 1434, 1438 (Fed. Cir.), cert. denied, 488 U.S. 825 (1988); Ashland Oil, Inc. v. Delta Resins & Refractories, Inc., 776 F.2d 281, 293, 227 USPQ 657, 664 (Fed. Cir. 1985), cert. denied, 475 U.S. 1017 (1986); ACS Hosp. Sys., Inc. v. Montefiore Hosp., 732 F.2d 1572, 1577, 221 USPQ 929, 933 (Fed. Cir. 1984). These showings by the examiner are an essential part of complying with the burden of presenting a prima facie case of obviousness. Note In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992). If that burden is met, the burden then shifts to the applicant to overcome the prima facie case with argument and/or evidence. Obviousness is then

determined on the basis of the evidence as a whole. See id.; In re Hedges, 783 F.2d 1038, 1039, 228 USPQ 685, 686 (Fed. Cir. 1986); In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984); and In re Rinehart, 531 F.2d 1048, 1052, 189 USPQ 143, 147 (CCPA 1976).

We consider first the rejection of claims 2-4, 6, and 8-13 based on the teachings of JP'313¹ in view of Sweeny and Bawa.

The appellants state (brief, page 7) that claim 2 recites "a liquid packing injected into said flange-fastening-means inserting holes" and assert (id.) that neither JP'313 nor Sweeny shows a liquid packing. According to the appellants (id.), Bawa teaches the use of a curable fluid material 15. However, in Bawa, there is no liquid packing between the gland nut 28 and the connector body 24. Appellants maintain (id.) that there is therefore no suggestion to relocate the curable fluid material to a location corresponding to the flange-fastening-means inserting holes. The examiner's position

¹ In determining the teachings of JP'313, we will rely on the translation provided by the USPTO. A copy of the translation is attached for the appellants convenience.

(answer, page 5) is that Bawa's teaches, in an analogous art, inserting a liquid packing 15 into a gap between two components. The examiner concludes (id.), that the modification would have been obvious for environmental insulation of the components.

We find that in Bawa (Figure 1, and col. 3, lines 2-4 and 51-53), the curable fluid 15 is placed between the outer surface of metal sheath 14 and the central passage 37 of grounding sleeve 22. From the disclosure of Bawa, we agree with the appellants that Bawa does not disclose the use of curable fluid between the connector body 24 and the gland nut 28 and would not have suggested providing JP'313 with liquid packing injected into the flange-fastening-means inserting holes.

However, we find that JP'313 teaches the use of a liquid packing injected into the flange-fastening-means insertion opening. JP'313 (translation, 8th page) discloses that

After the flange connection section is assembled and its air-tight sealing is examined, a liquid gasket is filled through the hole 9 or bolt hole 10 by removing one bolt. By this, the liquid gasket moves forward in the groove 8 filling in all the bolt holes and penetrating into the spaces between the bolts and the bolt

holes. Therefore, as shown in Fig. 3, a ring of liquid gasket is formed outside the O ring, preventing water from entering the flange, which in turn prevents the corrosion of the flange. The air-tight sealing is examined prior to filling the liquid gasket, so this examination becomes more reliable.

The removed bolt can be inserted and tightened after filling the liquid gasket. If the hole 9 is used, the hole is plugged. If the liquid gasket material is a rubber vulcanized at a normal temperature, it will be cured in a few days after having been filled, so the plugging will not be necessary. Groove 8 may be made in both flanges 4 and 8, and the same effect will be produced by it.

Fig. 4 shows a variant form of the present invention. When insulating spacer 12 is installed between the flanges, the width of the groove 8 is made larger than the diameter of the buried metal element 13 to prevent the corrosion of buried metal element 13 by making the front face of the buried metal element tightly contact with the liquid gasket 6. In the embodiment example of Fig. 4, the corrosion of the buried metal element is prevented as well as that of the flange.

Notwithstanding the appellants statement to the contrary (brief, page 7), that JP'313 does not disclose a liquid packing, we note that appellants' specification (page 1), in a description of JP'313 sets forth

Further, to cope with corrosion of flange faces due to penetration of rainwater or the like, a liquid packing is injected under pressure through an injection opening which communicates with the inside of the flanges, thereby forming an annular gasket between the flanges to retain watertightness.

From all of the above, we therefore find that JP'313 discloses a liquid packing injected into said flange-fastening-means inserting holes.

The appellants further assert (brief, page 7) that Sweeny discloses a seal disposed outwardly from its bolts, but shows no outward groove.

The examiner's position (answer, page 12) is that JP'313 "has enough grooves to meet the requirements of the claims, they are just not positioned as recited in the claims. The Sweeny et al. reference is used to teach the positioning of one of the grooves and its associated sealing means outwardly of the flange-fastening-means inserting holes."

We find that JP'313 (translation, page 3) discloses that "for this type of existing equipment, there is a danger such that the corrosion of the metallic studs and bolts caused by the permeation of rainwater advances to the o-ring area, disabling the retention of the airtightness," and that

(translation, page 7) there are single or double ring-shaped grooves. From these teachings of JP'313, that the o-ring area is used to prevent permeation of rainwater from the area from the bolts, we see no reason why one of ordinary skill in the art would have been motivated to have removed one of the o-ring areas and repositioned it in an area outward of the flange-fastening-means as advanced by the examiner, as such modification would have provided less protection against advancing rainwater. We do find, however, that Sweeny suggests (Figure 1; col. 1, line 43, and col. 2, lines 32-34) providing the outwardly extending flanges 3 of hollow metal frame 2 with sealing means 22, 23 on both the inside and outside of the bolts 21. It is not altogether clear in Sweeny as to whether the inner edges of each flange is circumferentially grooved or beveled. Assuming arguendo that the inside edge of each flange is beveled, forming a circumferential v-shaped notch between the flanges 3, in our view, a skilled artisan would have been motivated to have formed the area that receives the brazen seal as a grooved rather than beveled area. The rationale behind the modification is that a annular grooved recess between the

inner edges of the flanges 3 would have provided better seating for the brazen sealing material that would a circumferential v-shaped notch between the flanges. We find that Sweeny suggests connecting the flanges with sealing means both inward and outward of the bolts. We further find that providing the bolts with both inner and outer annular seals between the flanges would have provided a better seal than simply providing an annular seal inward of the bolts.

The appellants additionally assert (brief, page 8) that the brazed seal 23 of Sweeny is not identical to or an equivalent to the disclosed o-ring 5, and under 35 U.S.C. § 112, sixth paragraph, the "brazed seal 23 is not within the scope of the sealing means recited in claim 2." We find that claim 2 recites "sealing means." We note that the appellants' specification to an o-ring seal or even a flexible seal as advanced by the appellants. We find that the specification (page 2) states "such as an o-ring. In addition, appellants' brief (page 8) states that the o-ring is a "preferred example." We therefore find that the language of the specification would include as equivalents other types of metal-to-metal seals, such as the brazing of Sweeny.

In applying the teachings of Sweeny to JP'313, we note that claim 2 recites that an insulating spacer is inserted between the flanges. The appellant asserts (reply brief, page 2) that in JP'313 the metal flanges are fastened "via an intervening insulating spacer. The brazed seal of Sweeny, however, cannot be used between a metal flange and an insulating spacer. The brazed seal is a metal seal (typically solder), which does not suitably seal a gap between a metal flange and an insulating material. Thus, the person of ordinary skill in the art would not combine the Sweeny brazed seal with the flange-and-insulating spacer taught by JP'313." We agree. We note that the term "brazing" is defined² as "a group of welding processes for joining metals which have lower melting points than the metals joined." Typical chemical fluxes used in brazing have useful temperatures 700°F - 1600°F. In comparison, the IEEE³ insulating-material classification for insulators is generally from 90°C over

² McGraw-Hill Encyclopedia of Science and Technology 1971, vol. 2, pps 353-355, a copy of which is attached to this decision.

³ IEEE Dictionary of Electrical and Electronics Terms, Sixth Edition, 1996 page 531, a copy of which is attached to this decision.

220°C, which is much lower than the brazing temperature of metals. From all of the above, we see no reason, nor has any persuasive reason been provided by the examiner, as to why a skilled artisan would have been led to braze the insulating material of JP'313, which would have been necessary in order to have provided JP'313 with an outer groove and seal. We therefore conclude that the examiner has failed to establish a prima facie case of obviousness of the invention of claim 2. Accordingly, the rejection of claim 2 under 35 U.S.C. § 103 as unpatentable over JP'313 in view of Sweeny and Bawa is reversed.

As claims 3 and 4 depend from claim 2, the rejection of claims 3 and 4 under 35 U.S.C. § 103 is reversed. With respect to independent claims 8 and 13, both of these claims include the insulated spacer between the flanges. Accordingly, the rejection of claims 8 and 13 under 35 U.S.C. § 103 is reversed. As claims 9-11 depend from claim 8, the rejection of claims 8-10 under 35 U.S.C. § 103 is reversed.

With respect to claims 6 and 12, we note that independent claims 6 and 12 do not recite the insulating spacer between

the flanges. We find that Figures 1 and 2 of JP'313⁴ disclose a minute gap between the flanges which is filled by a liquid gasket. For the reasons discussed with respect to claim 2, we find that JP'313 and Sweeny would not have suggested providing the flanges of JP'313 with an annular groove and seal outwardly of the flange-fastening-means on order to provide a better seal between the flanges. As the area of JP'313 outward of the flange-fastening-means already having a liquid sealant, we find no reason to have brazed the joint between the flanges. In addition, as stated supra, with respect to claim 2, a skilled artisan would not have been led to have brazed an area containing a liquid gasket. Accordingly, the rejection of claims 6 and 12 under 35 U.S.C. § 103 is reversed.

Turning to claim 5, as claim 5 depends from claim 2, and Hama does not overcome the deficiencies of JP'313, Sweeny and Bawa, the rejection of claim 5 is reversed.

⁴ We refer to original figures 1 and 2 of JP'313 which is found on pages 50 and 51 of the document. These figures differ from amended Figures 1 and 2, which appear on page 53 of the document.

The appellants additionally assert (brief, page 8) that the brazed seal 23 of Sweeny is not identical to or an equivalent to the disclosed o-ring 5, and under 35 U.S.C. § 112, sixth paragraph, the "brazed seal 23 is not within the scope of the sealing means recited in claim 2."

Add footnote re the alternative features of placement of the grooves, openings in the flange or the spacer not in spec (verify) but are in orig filed claims (verify). Cite MPEP re need to put lang in claims in the description in the spec, and cite rule 83 a as failing to fully illustrate the claims. Say these are formal matters that can be addressed by the examiner subseq to the appeal.

CONCLUSION

To summarize, the decision of the examiner to reject claims 2-6 and 8-13 under 35 U.S.C. § 103 is reversed.

REVERSED

JAMES D. THOMAS)	
Administrative Patent Judge)	
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Administrative Patent Judge)	AND
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